# HOLIDAY SAFETY

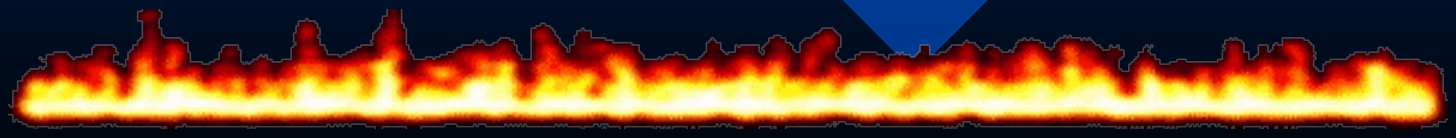
## Christmas Lighting Tips

# Overview

- Holiday Safety Statistics
- Christmas Tree Safety
- Extension Cord Safety
- General Lighting Safety
- Installation Safety
- Conclusion

# The Stats

- 8,700 people injured each year
  - Falls
  - Cuts
  - Shocks
- 400 fires annually
  - 20 deaths
  - 70 injuries
  - $15M in property loss and damage



# Christmas Tree Safety

- NEVER use candles to decorate trees
  - Unsafe practice of the past, but still done for tradition's sake!
  - If you must do it….never leave unattended
- Water cut trees daily
  - Rule of thumb: 1 qt water per 1" diameter per day (initially)
  - Dispose of tree immediately after season ends before the needles dry out
- NEVER place near heat source
  - Space heater, fire place, radiators, etc.

# Tree Safety Continued

- Artificial trees
  - Look for “Fire Resistant” label
    - » May still catch fire, but will resist burning and extinguish quickly
  - NEVER use electric lights on metallic tree
    - » Faulty lights may charge the metal
    - » Electrocution may result
- Use “Non-tip” style tree stands
- Avoid lead-based decorations
  - Hazardous to children if ingested

# Extension Cords

## The Boring But Essential Basics

- Use only UL or FM approved
- Always INSPECT for damage
  - Look for damaged insulation, splices, or loose plugs
- Never run through doorways or under rugs
  - Insulation can become damaged
  - Potential fire or shock hazard
- Match plugs with outlets
  - Never force a 3-prong plug into 2-prong socket
- Store cords indoors when not in use
  - Outdoor conditions can deteriorate cord over time

# Extension Cord Safety
## Important Usage Tips

- Never use indoor cords outdoors!
- Know cord rating and total load placed on it!
  - Cord gauge based on American Wire Gauge (AWG) system
  - The larger the wire, the smaller the AWG #
  - A 12 AWG cord can power more than 14 AWG
- Sample cord ratings (always read cord label):
  - 18 AWG – 8 Amps
  - 16 AWG – 13 Amps (typical outdoor lawn cord)
  - 14 AWG – 15 Amps
  - 12 AWG – 20 Amps (industrial applications)

# Extension Cord Safety
## Did You Know?

- Cord Length
  - A cord, based on its gauge, can power a certain wattage at specific distances
    - »As the cord gets longer, the current carrying capacity of the cord gets lower
  - A 16 gauge cord **less than** 50’ will power 1625W
  - **Over 50’ cord length good for only 1250W!!**

“Hey, it reaches…I found the right cord!

# Wattage Calculations
## Safety through Knowledge!

- Alright, Clark…..that's a lot of Christmas lights!
- ALWAYS be aware of power being used by your light display
  - Most smaller displays stay well within the limit of cord ratings
  - But…..how close are you to passing the threshold and have you ever known?
- Consider replacing larger bulbs that burn hotter with cooler burning miniature lights

# Power Conversions

- Watts = Volts*Amps
- Volts = Watts/Amps
- Amps = Watts/Volts

- Many Christmas light products vary in regards to power ratings provided
  - Some lights give rating in watts, while others may indicate amps
  - Regardless, know the rating and how to convert into something useful

# Power Calculations

- Most larger bulbs list power draw in watts
- For example, the larger C-7 bulbs typically pull 5 watts per bulb
- Simply count the number of bulbs and multiply by wattage value
  - 250 C-7 bulbs * 5W/bulb = 1250W
- A 16AWG cord will support, but….
  - Don’t forget about cord length, deterioration, and other factors

# Power Calculations

- Don’t overlook power draw on smaller light sets
  - Mini-lights are touted for their efficiency and low-cost power usage
  - Be cautious of the math!
- A standard mini-light set of 100 lights uses 40 watts (about .34 amps)
  - A large outdoor tree decorated with minis may use up to 2,000 lights (800W)
  - If powering this tree on same cord as house decorations, you can easily overload the cord and/or outlet

# Cords - A Few Basic Tips

- If in doubt, simply feel the cord after power has been applied for 20-30 minutes
  - If it's warm to the touch, decrease the load!
- Use of an Amp Clamp to measure exact loads is safest method
- Avoid "daisy-chaining" multiple cords and light strands
  - Not because OSHA frowns on it, but because you will run a higher risk of fire, overload, etc.
- Keep it Simple.  Keep it Safe.

# General Lighting Safety

- Use only lights tested by recognized testing laboratory (ie. UL approved)
- Check light strands for broken sockets, frayed or bare wires, or loose connections
- NEVER use indoor lights outside
  - Green label = indoor use; Red = outdoor
- Turn off all lights when you go to bed or leave the house
- For added shock/electrocution protection
  - Plug lights into circuits protected by Ground Fault Circuit Interrupters (GFCI)

# Installation Safety

- Avoid using tacks, nails or metal staples to secure light strands
  - Use insulated staples
  - Pre-installed hooks are safe and convenient
- Install lights without power/unplugged
  - Avoids shock if you touch overlooked exposed wire
- Fasten outdoor lights securely to protect from wind damage

# Installation Safety

- Fall Protection
  - Various types
  - Use for working heights > 10 feet
- Ladder Safety
  - Inspect and use ladder appropriate for the job
  - Visit http://siri.uvm.edu/ppt/laddertalk for more
- Eye protection
  - Wear safety glasses when decorating trees
  - Scratched corneas hurt!

# Fact or Fiction

- Never plug more than 3 light strands into one extension cord? **FICTION**
  - Not sure where this “rule of thumb” common to lighting safety originated, but it’s out there
  - A standard rule has always been not to plug more than 3 light strands together (mini lights, icicle lights, etc.) to avoid overloading the strand wire themselves
  - Newer, heavy duty light strands now allow as many as 6 strands to be plugged in sequence
  - May be an over simplistic rule to prevent “daisy-chaining” (ie. running multiple 3-light strands into one cord using 3-outlet cube taps)

# Fact or Fiction

- Indoor cords are not rated the same as Outdoor extension cords? **Fact and Fiction**
- The typical brown or white indoor extension cord commonly used in the home is rated at 16 AWG
  - The same as a common outdoor cord used to power such items as weed eaters, small tools, etc.
- What's the difference?
  - Outdoor cords are 3-wire with neutral to ground
  - Outdoor cords are better insulated to handle outside wear/tear

# Conclusion

- Follow basic tree and lighting safety guidance
- Know the load being placed on extension cords
- Get help from a qualified electrician if needed
- Have fun while decorating……SAFELY!

HAPPY HOLIDAYS